DEKRA Testing and Certification, S.A.U.
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C.I.F. A29 507 456

ISED CABid: ES1909

Test report No:
NIE: 65059REM.002A1

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (Updated 2019-04)

(*) Identification of item tested	The Water Control Bluetooth can be used to automatically irrigate your garden by scheduling the timer on the smart phone and send it to the product via Bluetooth .
(*) Trademark	GARDENA
(*) Model and /or type reference	Water Control Bluetooth (Art. 1889)
Other identification of the product	HW Version: EP1 SW Version: 1.4.4.8 FCC ID: 2AZXO-1889 IC: 27370-1889
(*) Features	Bluetooth LE 5.1
Manufacturer	GARDENA GERMANY AB PO Box 7454 S-103 92 Stockholm Sweden
Test method requested, standard	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (Updated 2019-04)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Jose Manuel Gómez Galván Industrial & Automotive EMC Lab Manager Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456) Fecha: 2022.03.04 08:44:17 +01'00'
Date of issue	2022-03-04
Report template No	FDT08_23 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is a FCC recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report, FCC designation number ES0004.

DEKRA Testing and Certification S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

DEKRA Testing and Certification is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is I = ± 4,9 dB for quasi-peak measurements, I = ± 4,6 dB for peak measurements (k= 2).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 12.75 GHz is I = ± 2,6 dB for peaks and average measurements (k = 2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested"

2. The GARDENA Water Control (Art. 1889) is intended for private use in domestic and hobby gardens, exclusively for outdoor use, to control sprinklers and watering systems. The GARDENA Water Control can be used for automatic watering during holidays. The Water Control Bluetooth® Art. 1889 forms part of an irrigation system in conjunction with the Bluetooth® App.

3. Factory: Kitron Electronics Manufacturing (Ningbo) Co. Ltd.No. 189 Donghui Road, Nordic Industry Park, Zhenhai District, Ningbo 315221, China

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples under test have been selected by: The client.

Sample **S/01** is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
65059/069	GARDENA Water Control	Water Control Bluetooth (Art. 1889)	---	2020-09-11
65059/062	Valve	---	---	2020-09-11

Test sample description

Ports……. :	Port name and description		Cable				
			Specified length [m]	Attached during test		Shielded	
	N/A			☐		☐	
				☐		☐	
Supplementary information to the ports……. :							
Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 9Vdc battery.					
Rated Power .....:	<1W						
Clock frequencies.....:	48MHz, 32.768kHz						
Other parameters .....:	Not provided data						
Software version .....:	1.4.4.8						
Hardware version .....:	EP1						
Dimensions in mm (L x W x D)....:	Not provided data						
Mounting position .....:	☐	Table top equipment					
	☒	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					
Modules/parts.....:	Module/parts of test item		Type			Manufacturer	
	N/A					Safera	
Accessories (not part of the test item) .....:	Description		Type			Manufacturer	
	N/A						
Documents as provided by the applicant.....:	Description		File name			Issue date	
	N/A						

Identification of the client

GARDENA Manufacturing GmbH.
Hans-Lorenser-Str. 40, 89079 Ulm, Germany.

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2020-09-11
Date (finish)	2020-09-14

Document history

Report number	Date	Description
65059REM.002	2021-07-15	First release
65059REM.002A1	2022-03-04	Second release. Typographic error in operation mode. This modification test report cancels and replaces the test report 65059REM.002s.

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
2942	EMI TEST RECEIVER 20Hz-40GHz	ESU40	ROHDE AND SCHWARZ	2021-09-17
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2022-05-27
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2021-06-14
5641	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2021-07-31
6064	SEMIANECHOIC ABSORBER LINED CHAMBER III	SAC-3	Frankonia	---
6126	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2021-04-17
6132	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2021-04-20
6195	PRE-AMPLIFIER G>55dB 1-18GHz	AMF-7D-01001800-22-10P	NARDA	2021-05-19
6329	SHIELDED ROOM	---	FRANKONIA	---

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Daniel Mejías.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

Emission Test		
Requirement – Test case	**Verdict**	**Remark**
Radiated emission. Electromagnetic field measure (30 MHz – 1000 MHz)	P	---
Radiated emission. Electromagnetic field measure (1 GHz – 12.75 GHz)	P	---
Radiated emission. Electromagnetic field measure (12.75 GHz – 40 GHz)	N/A	(1)
Continuous conducted emission (150 KHz – 30 MHz)	N/A	(2)

Supplementary information and remarks:

(1) Range: f>12.75 GHz. Test required only if the 5th harmonics of the maximum internal work frequency EUT is higher than 12.75GHz.

(2) This test is not applicable according to standard. Equipment powered by DC internal battery.

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. The operation modes used by the samples to which the present report refers, are shown in the following table:

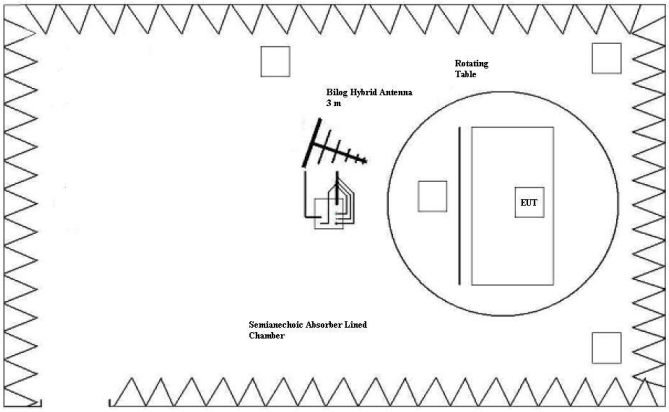
OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Closed valve. Bluetooth in RX mode. Worst Case. Power supply: 9Vdc (Internal battery).

RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

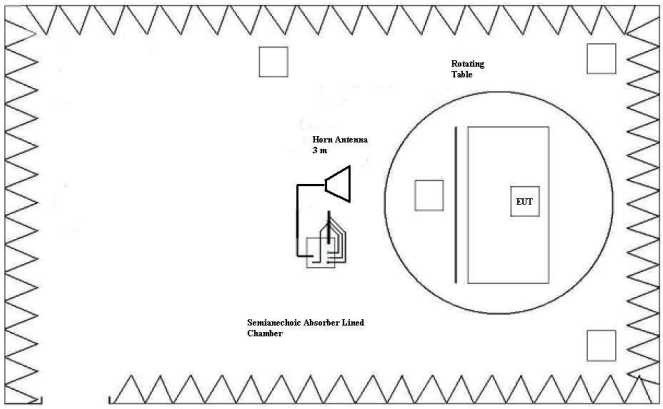
LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (Updated 2019-04)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (Updated 2019-04)

Limits of interference Class B
The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-19 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2019)

Frequency of emission (MHz)	Field strength (microvolt/meter)
30-88	100
88-216	150
21-960	200
Above 960	500



Setup for measurements < 1GHz.



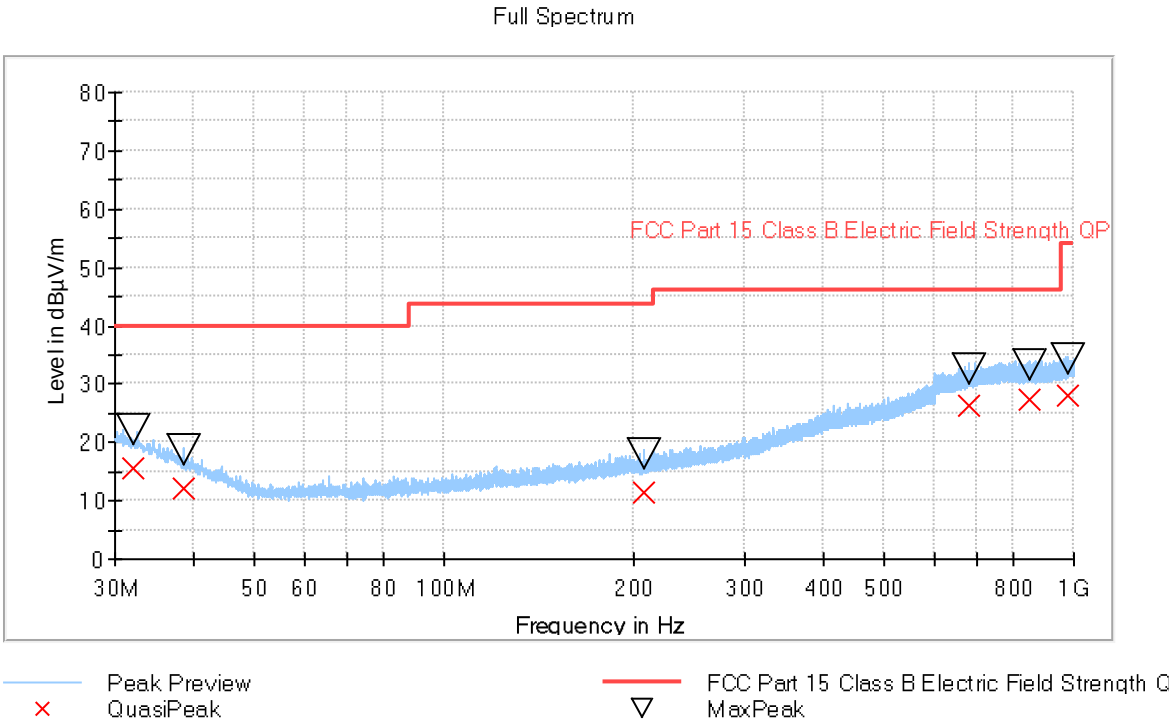
Setup for measurements > 1GHz.

TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR_HP	Range: 1 GHz – 12.75 GHz. Horizontal polarization.	P
CR0101HR_VP	Range: 1 GHz – 12.75 GHz. Vertical polarization.	P

Radiated Emission. CR0101LR

Project:	65059REM.002
Company:	GARDENA MANUFACTURING GMBH
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. Closed valve. Bluetooth in RX mode. Worst Case. Power supply: 9Vdc (Internal battery).



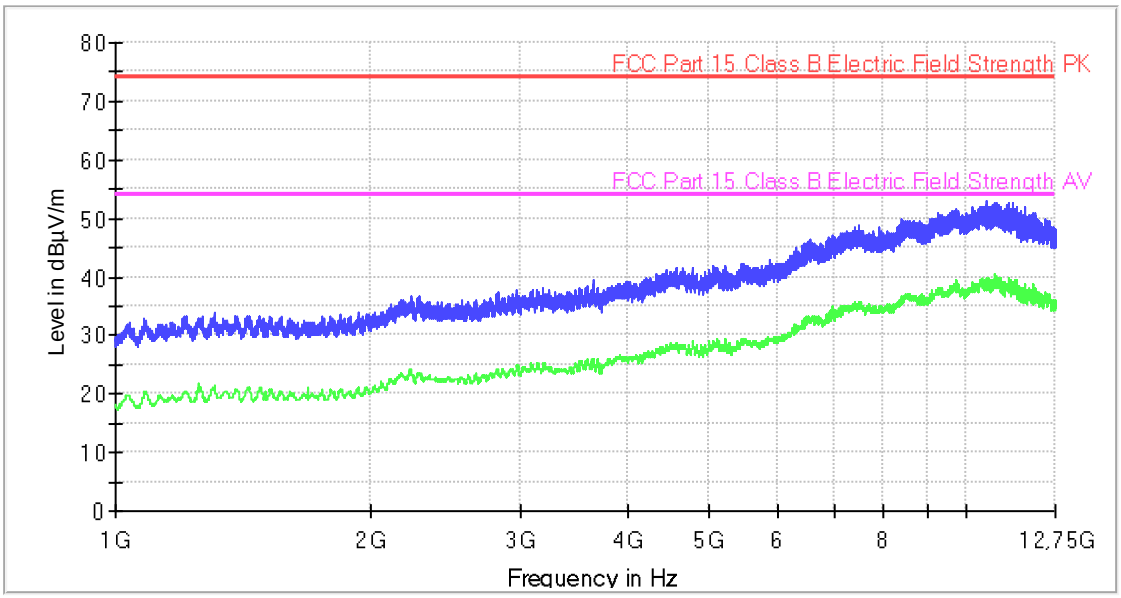
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
32.044000	15.67	22.24	40.00	24.33	300.0	H	-51.0
38.521000	12.24	18.82	40.00	27.76	167.0	V	-3.0
207.720000	11.52	18.12	40.00	28.48	290.0	H	-85.0
679.848000	26.36	32.48	47.00	20.64	288.0	H	55.0
849.858000	27.33	33.32	47.00	19.67	383.0	H	180.0
975.123000	28.06	34.44	47.00	18.94	213.0	V	28.0

Radiated Emission. CR0101HR_HP

Project:	65059REM.002
Company:	GARDENA MANUFACTURING GMBH
Sample:	S/01
Operation mode:	OM/01
Description:	EUT ON. Closed valve. Bluetooth in RX mode. Worst Case. Power supply: 9Vdc (Internal battery).Horizontal polarization.

RE FCC Part 15 ClassB 1-12,75 GHz



Average Scan
Peak Scan
FCC Part 15 Class B Electric Field Strength PK
FCC Part 15 Class B Electric Field Strength A

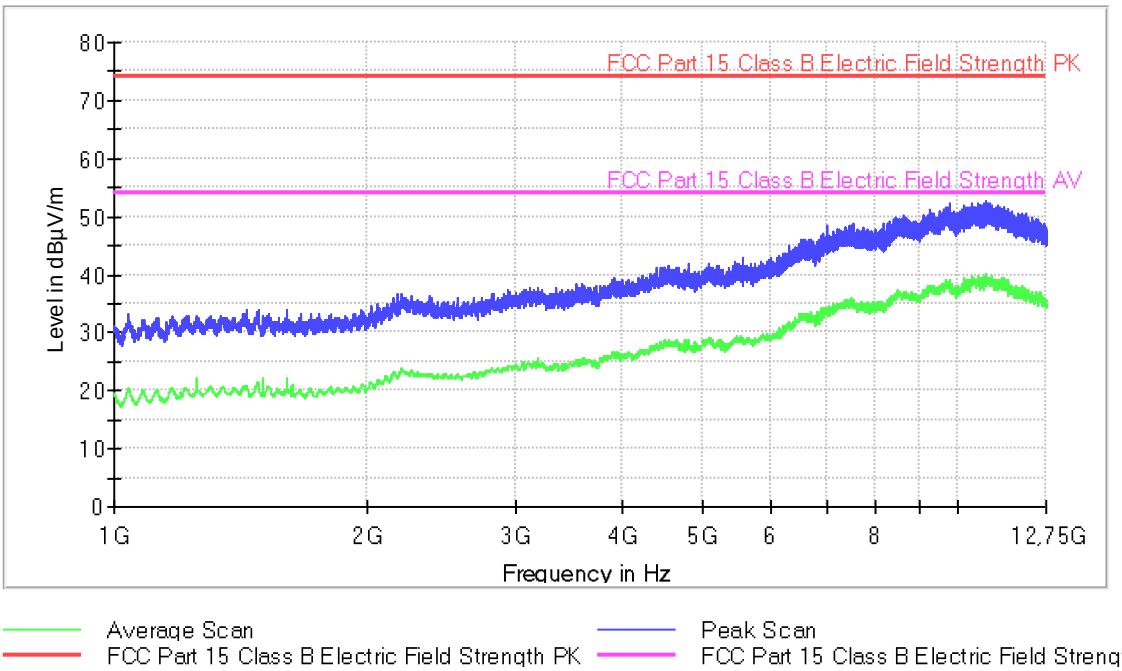
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)	Height (cm)	Pol
2165.200000	36.2	23.3	200.0	H
3182.000000	37.9	24.9	200.0	H
4445.600000	41.4	28.3	200.0	H
5490.800000	42.3	29.1	200.0	H
6582.400000	46.5	32.9	200.0	H
7486.400000	48.8	35.1	200.0	H
8396.400000	50.0	36.1	200.0	H
10202.000000	52.0	38.8	200.0	H
10572.000000	53.1	39.9	200.0	H
11729.200000	51.8	38.3	200.0	H

Radiated Emission. CR0101HR_VP

Project:	65059REM.002
Company:	GARDENA MANUFACTURING GMBH
Sample:	S/01
Operation mode:	OM/01
Description:	EUT ON. Closed valve. Bluetooth in RX mode. Worst Case. Power supply: 9Vdc (Internal battery).Vertical polarization.

RE FCC Part 15 ClassB 1-12,75 GHz



Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)	Height (cm)	Pol
2164.400000	36.6	22.6	200.0	V
3109.200000	37.9	24.5	200.0	V
4392.400000	41.3	28.0	200.0	V
5577.600000	42.8	28.7	200.0	V
6695.600000	46.2	32.8	200.0	V
7538.800000	48.7	34.8	200.0	V
8630.800000	50.2	37.0	200.0	V
9790.000000	52.2	38.7	200.0	V
10794.000000	52.8	39.6	200.0	V
11598.800000	50.9	37.6	200.0	V